

CLAIMS:

0989577-110801

1. A cooler for an electronic device which cools a heating element provided on the electronic device, which comprises:
a liquid cooling mechanism, composed of
a heat sink formed in a flat shape and having a heat-receiving face at one surface thereof intended to be in contact with said electronic device, and having a liquid channel formed therein,
a pump portion composed of a housing formed in a flat shape and having an impeller and rotatably provided therein, and metal pipes each connecting said liquid channel to said pump portion, and
a forcible air cooling mechanism, composed of
a radiating fin provided on the outer surface of said metal pipes, and
a fan which cools said radiating fin and said housing,
said liquid cooling mechanism and said forcible air cooling mechanism being unified with each other.

2. The cooler for an electronic device as claimed in Claim 1, wherein said impeller and said fan are arranged in such a manner that the axis of the rotation of the impeller forming said liquid cooling mechanism and the axis of the rotation of the fan forming said forcible air cooling mechanism are positioned on an identical line.

3. The cooler for an electronic device as claimed in Claim 1 or 2, wherein said fan and said impeller are rotated together.

Sub 12/ 4. The cooler for an electronic device as claimed in Claim 3, wherein a magnet for rotating the fan which rotates under the influence of the magnetic fluctuation of the motor substrate and a magnet for driving the impeller are placed on said fan while a passive magnet which receives the magnetic force from said magnet for driving the impeller, is placed on said impeller.

5. The cooler for an electronic device as claimed in Claim 3, wherein a magnet for rotating the fan which rotates under the influence of the magnetic fluctuation of the motor substrate is placed on said fan while a passive magnet which receives the magnetic force of said magnet for rotating the fan is placed on said impeller such that said fan and said impeller are rotated together.

Sub 11/ 6. The cooler for an electronic device as claimed in Claim 4 or 5, wherein said motor substrate is made of an insulating plate having a coil formed on the surface thereof, said fan is in the form of a thin plate having a plurality of bent blades on the periphery of a thin plate having a rotation axis at the middle portion thereof, and said motor substrate, said fan and said pump portion in a flat form are laminated on each other.

Sub 13/ 7. The cooler for an electronic device as claimed in Claim 1, wherein the metal pipes each connecting the pump portion to the liquid channel of the heat sink are folded at least once between the pump portion and the heat sink, and said radiating fin is placed between the folded metal pipes.

8. The cooler for an electronic device as claimed in Claim 7, wherein said radiating fin and the portions of said metal pipes on

which the radiating fin is placed are mounted on and in contact with a mounting plate having the housing provided thereon to form the pump portion.

9. The cooler for an electronic device as claimed in Claim 8, wherein a port capable of having air being passed therethrough is formed on at least one portion of the mounting plate where the radiating fin is positioned.

10. The cooler for an electronic device as claimed in Claim 1, wherein the heat sink is made of aluminum which is a highly heat-conductive material, and that the metal pipe is made of copper.